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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/530,524	04/07/2005	Robert Stevens	1028-0199PUS1	6766

2292 7590 01/05/2007
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EXAMINER	
CHU, CHRIS H	
ART UNIT	PAPER NUMBER
2874	

SHORTENED STATUTORY PERIOD OF RESPONSE	NOTIFICATION DATE	DELIVERY MODE
3 MONTHS	01/05/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Notice of this Office communication was sent electronically on the above-indicated "Notification Date" and has a shortened statutory period for reply of 3 MONTHS from 01/05/2007..

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary	Application No.	Applicant(s)	
	10/530,524	STEVENS ET AL.	
	Examiner	Art Unit	
	Chris H. Chu	2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15,25-32,38,43 and 44* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15,25-32,38,43 and 44* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 April 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *7/05,9/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Drawings

Eleven (11) sheets for formal drawings were filed April 7, 2005 and have been accepted by the Examiner.

Specification

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

(a) TITLE OF THE INVENTION.
(b) CROSS-REFERENCE TO RELATED APPLICATIONS.
(c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
(d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
(e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
(f) BACKGROUND OF THE INVENTION.
    (1) Field of the Invention.
    (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
(g) BRIEF SUMMARY OF THE INVENTION.
(h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
(i) DETAILED DESCRIPTION OF THE INVENTION.
(j) CLAIM OR CLAIMS (commencing on a separate sheet).
(k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
(l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3, 6, 14, 28-31 and 43 are rejected under 35 U.S.C. 102(e) as being anticipated by Sherrer et al. (US 2002/0003917 A1).

Regarding claims 1 and 28, Sherrer et al. discloses an optical sensor and a method of fabricating said optical sensor comprising the steps of providing a silicon substrate (20 in Fig. 7) having a first surface and a second surface, providing a region comprising essentially of silicon dioxide (24 in Fig. 7) on or in the first surface of the silicon substrate, etching a channel (see Fig. 3b) into the silicon substrate from said second surface up to said silicon dioxide region, said channel being sized to receive an optical fiber whereby said silicon dioxide region forms an end portion of said channel which at least partially closes said channel; and coating at least a portion of the silicon dioxide region with a coating (60 in Fig. 7) to form an environmentally-sensitive element.

Regarding claims 2 and 29, Sherrer et al. discloses the silicon substrate and silicon dioxide region form a single substrate element in Fig. 7.

Regarding claim 3, Sherrer et al. discloses the silicon substrate to be monolithic in Fig. 7.

Regarding claim 6, Sherrer et al. discloses forming at least one projection (28 in Fig. 7) comprising essentially of silicon dioxide on said silicon dioxide region in paragraph 0043.

Regarding claims 14 and 30, Sherrer et al. discloses the silicon dioxide region to include a shoulder to define a constriction at the end portion of the channel and a reflective material (60 in Fig. 7) coated on the silicon dioxide region that closes the constricted end.

Regarding claim 31, Sherrer et al. discloses the silicon dioxide to only partially close the channel to create an opening (see Fig. 6) and the coating comprises a reflective material that covers a region of silicon dioxide surrounding the opening and extends over the opening. The unlabeled reflective material on the diaphragm 34, similar to optical coating 38 in Fig. 1 covers a region of silicon dioxide surrounding the opening and extends over the opening.

Regarding claim 43, Sherrer et al. discloses the coating to be reflective such that the sensor is sensitive to pressure in paragraph 0066.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to

a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 12, 15, 25-27 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sherrer et al. (US 2002/0003917 A1).

Regarding claim 12, Sherrer et al. teaches the claimed invention except for the profile of the projection to be tapered. However, it is well known in the art to form projections having a tapered profile, and one having ordinary skill in the art at the time the invention was made would have found it obvious to form tapered projections for the purpose of increasing absorption in the projection.

Regarding claim 15, Sherrer et al. teaches the claimed invention except for specifically stating the etching of the silicon dioxide region occurring after the reflective material has been applied. However, one having ordinary skill in the art would have found it obvious to do so for the purpose of attaching the reflective material to a completely flat surface before the surrounding region is processed further.

Regarding claims 25 and 38, Sherrer et al. teaches the claimed invention except for fabricating a plurality of optical sensors on a common substrate. However, fabricating multiple devices on a common substrate is well known in the art, and one having ordinary skill in the art at the time the invention was made would have found it obvious to fabricate multiple optical sensors on the same substrate for the purpose of using space efficiently on the substrate.

Regarding claim 26, Sherrer et al. discloses the channel sized to receive an optical fiber and each silicon dioxide region forms an end portion of the channel which at least partially closes the channel in Fig. 7.

Regarding claim 27, Sherrer et al. discloses etching a single channel optically coupled to the environmentally sensitive element (60 in Fig. 7).

Claims 4, 5 and 7-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sherrer et al. (US 2002/0003917 A1) in view of Graul (4,001,465).

Regarding claims 4 and 5, Sherrer et al. teaches the claimed invention except for etching a groove in the surface of the silicon substrate and oxidizing a portion of the surface to form the silicon dioxide region. Graul et al. teaches forming a silicon dioxide region by etching a groove in the surface of the silicon substrate and oxidizing a portion of the surface to form the silicon dioxide region in Figs 3 and 5. Since both inventions relate to the production of silicon dioxide regions, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the method of forming silicon dioxide regions as disclosed by Graul et al. in the sensor disclosed by Sherrer et al. for the purpose of forming a silicon dioxide region in the silicon substrate.

Regarding claim 7, Sherrer et al. teaches the claimed invention except for etching silicon to form at least one structure projecting outwardly and oxidizing the structure to form the projection. Graul et al. teaches forming a silicon dioxide region by etching silicon to form a structure projecting outwardly (silicon regions adjacent to recesses 4 in Fig. 3 project outward) and oxidizing the structure to form the projections in Figs 3 and 5. Since both inventions relate to the production of silicon dioxide regions, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the method of forming silicon dioxide regions as disclosed by Graul et

al. in the sensor disclosed by Sherrer et al. for the purpose of forming a silicon dioxide region in the silicon substrate.

Regarding claim 8, the proposed combination of Sherrer et al. and Graul et al. teaches the claimed invention except for etching the surface of the silicon substrate to form at least one structure projecting outwardly, and oxidizing a portion of the surface to form the silicon dioxide region and at least one projection. Since Graul et al. teaches etching silicon and oxidizing to form a silicon dioxide region in Figs. 3 and 5, one having ordinary skill in the art at the time the invention was made would have found it obvious to etch the surface and form the projection and oxidize the surface for the purpose of having to oxidize the surface only once to form a silicon dioxide region with a projection.

Regarding claims 9-11, the proposed combination of Sherrer et al. and Graul et al. teaches the claimed invention except for etching two concentric grooves, two or more linear parallel grooves, or a plurality of enclosed grooves in the silicon. However, since Graul et al. teaches etching grooves in silicon, one having ordinary skill in the art would have found it obvious to etch any desired number or type of grooves in the silicon for the purpose of forming the desired silicon dioxide projections.

Claims 13, 32 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sherrer et al. (US 2002/0003917 A1) in view of Brogardh et al. (4,473,747).

Regarding claims 13 and 32, Sherrer et al. teaches the claimed invention except for coating a luminescent material over a cavity in the substrate. Brogardh et al. teaches forming a sensor by coating a luminescent layer over a cavity in a substrate in

Fig. 1. Since both inventions relate to the production of sensors, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a luminescent layer over the cavity as disclosed by Graul et al. in the sensor disclosed by Sherrer et al. for the purpose of forming a sensor that is sensitive to the light emitted by the luminescent layer.

Regarding claim 44, Sherrer et al. teaches the first claimed sensor but not the second sensor. In the rejection of claim 13 above, Sherrer et al. teaches a sensor with a layer of silicon dioxide on the surface of a substrate and a structure comprising silicon dioxide projecting outwardly from the silicon dioxide layer and a channel through the substrate for a fiber, while Brogardh et al. teaches a sensor for measuring fluid flow (see column 2, lines 48-51) with a luminescent material covering the cavity. As such, the proposed combination of Sherrer et al. and Brogardh et al. teaches this second sensor. Since both inventions relate to the production of sensors, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the sensor as disclosed by combination of Sherrer et al. and Brogardh et al. along with the sensor disclosed by Sherrer et al. for the purpose of forming a sensor system that measures both pressure and fluid flow.

Conclusion

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chris H. Chu whose telephone number is 571-272-8655. The examiner can normally be reached on 8:30 AM - 5:00 PM Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on 571-272-2344. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general or clerical nature should be directed to the Technology Center 2800 receptionist at telephone number (571) 272-1562.

Chris H. Chu
Patent Examiner
December 22, 2006

MICHELLE CONNELLY-CUSHWA
PRIMARY EXAMINER
12/26/06